AMENDMENTS TO THE CLAIMS

The claims are amended as described in the first paragraph of the Remarks section. In addition, a new dependent claim 19 is added to help make clear to even the lay reader what a geologic model is, by giving common examples very important in the oil and gas industry, as stated in paragraph 4 of the application:

> A geologic model's characterization of the subsurface derives from the assigning of geologic rock properties, such as lithology, porosity, acoustic impedance, permeability, and water saturation, to each of the blocks in the model.

CURRENT LISTING OF CLAIMS

The text of all pending claims, along with their current status, is set forth below in accordance with 37 C.F.R. § 1.121.

1. (*Currently amended*) A computer implemented method of generating a geologic model ~~of a random field~~ which has directionally varying continuity, comprising:

a) specifying a tentative model of a subsurface region of interest for said geologic model~~random field~~;

b) identifying connected strings of nodes within said tentative model, wherein a grid of azimuths is used to identify said connected strings of nodes;

c) performing a spectral simulation on each of said connected strings of nodes;

d) updating said tentative model with data values resulting from said spectral simulations.

2. (*Cancelled*)

3. (*Previously presented*) The method of claim 1, wherein said tentative model is subdivided into layers, and steps b), c) and d) are performed on a layer-by-layer basis.

4. (*Previously presented*) The method of claim 1, wherein for each of said connected strings of nodes said spectral simulation comprises:

a) determining a phase spectrum from a Fourier transform of each of said connected strings of nodes;

b) specifying an amplitude spectrum which represents the maximum-desired spatial continuity for each of said connected strings of nodes; and

c) inverse Fourier transforming said phase spectrum and said amplitude spectrum to determine updated data values for said nodes in each of said connected strings of nodes.

5. (*Previously presented*) The method of claim 4, wherein one or more of each of said connected strings of nodes is padded with additional data values prior to calculation of the Fourier transform of each of said connected strings of nodes.

6. (*Currently amended*) A computer implemented method of generating a geologic model ~~of a random field~~ which has directionally varying continuity, comprising:

a) specifying a tentative model of a subsurface region of interest for said geologic model~~random field~~ having one or more layers;

b) for each of said layers in said tentative model,

[i] specifying a grid of azimuths for nodes in said tentative model;

[ii] using said grid to identify connected strings of nodes within said tentative model;

[iii] performing a spectral simulation on each of said connected strings of nodes, each spectral simulation involving a determination of a phase spectrum from a Fourier transform of each of said connected strings of nodes, a specification of an amplitude spectrum which represents the maximum-desired spatial continuity for each of said connected strings of nodes; and the inverse Fourier transform of said phase spectrum and said amplitude spectrum to determine updated data values for said nodes in each of said connected strings of nodes; and

[iv] updating said tentative model with data values resulting from said spectral simulations.

7. (*Previously presented*) The method of claim 6, wherein one or more of each of said connected strings of nodes is padded with additional data values prior to calculation of the Fourier transform of said one or more of each of said connected strings of nodes.

8. (*Previously presented*) The method of claim 1, wherein neighboring nodes to each said node in each of said connected strings of nodes are identified and further wherein said spectral simulation is multidimensional.

9. (*Previously presented*) The method of claim 6, wherein neighboring nodes to each said node in each of said connected strings of nodes are identified and wherein said spectral simulation is two-dimensional.

10. (*Original*) The method of claim 1, wherein said tentative model is specified from a spectral simulation comprising:

a) determination of a phase spectrum from a Fourier transform of a first estimate of said tentative model;

b) specification of an amplitude spectrum for said tentative model; and

c) inverse Fourier transforming said phase spectrum and said amplitude spectrum to determine said tentative model.

11. (*Previously presented*) The method of claim 10, where said amplitude spectrum characterizes a short-range continuity desired in said tentative model.

12. (*Original*) The method of claim 10, where said spectral simulation is applied on a layer-by-layer basis to each of one or more layers of said tentative model.

13. (*Original*) The method of claim 10, where said tentative model is specified from a three-dimensional spectral simulation.

14. (*Previously presented*) The method of claim 13, wherein said identified connected strings of nodes are used to identify curtains of connected nodes, and two-dimension spectral simulation is applied to each of said curtains.

15. (*Previously presented*) The method of claim 1, wherein a grid of dips is used to identify said connected strings of nodes.

16. (*Previously presented*) The method of claim 1, wherein a combined grid of dips and azimuths are used in three-dimensions to identify said connected strings of nodes.

17. (*Previously presented*) The method of claim 1, wherein said grid of azimuths corresponds to blocks in said tentative model.

18. (*Previously presented*) The method of claim 1, wherein said identifying connected strings of nodes within said tentative model is repeated until each node within the tentative model is associated with one of the connected strings of nodes.

19. (*New*) The method of claim 1, wherein said geologic model is a model of a geologic rock property selected from a group consisting of: lithology; porosity; acoustic impedance; permeability; and water saturation.